

CLAIMS

1. A locking fastener assembly, comprising:
 - a) a fastener nut and a fastener washer rotatable relative to each other about a common axis;
 - 5 b) an annular washer bearing surface on said nut and an annular nut bearing surface on said washer, said annular bearing surfaces being axially opposed to each other;
 - c) each of said annular bearing surfaces having a plurality of inclined bearing faces oriented circumferentially and forming portions of an undulating
10 annular bearing surface; and
 - d) a clamping surface on said washer.
2. The locking fastener assembly of Claim 1 further characterized in that:
 - a) said washer includes a washer body and a flange extending radially outwardly from said washer body; and
 - 15 b) at least a portion of said clamping surface being formed on the washer flange.
3. The locking fastener assembly of Claim 2 further characterized in that:
 - a) said washer flange comprises a series of flange segments extending annularly around said washer body; and
 - 20 b) said flange segments being slightly flexible axially of said washer.
4. The locking fastener assembly of Claim 2 further characterized in that:
 - a) said clamping surface is normally slightly frusto-conical in shape.
5. The locking fastener assembly of Claim 1 further characterized in that:
 - a) said inclined bearing faces which are opposed to each other on respective
25 nut and washer are curved both radially and circumferentially of said assembly and are complementary to each other.
6. The locking fastener assembly of Claim 1 further characterized in that:
 - a) each of said nut and said washer is formed of steel.
7. The locking fastener assembly of Claim 1 further characterized in that:

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- a) said nut includes a nut body on which said washer bearing surface is formed, and an annular skirt extending from one end of said nut body adjacent its bearing surface;
 - b) said washer including a washer body having an aperture extending therethrough;
 - c) said skirt extending through said aperture when said nut and washer are assembled; and
 - d) at least some portion of said skirt being deformed outwardly after said nut and washer are assembled so as to loosely hold said washer on said nut.
- 10 8. The locking fastener assembly of Claim 7 further characterized in that:
- a) said nut body is internally threaded so that it can be turned onto an externally threaded member;
 - b) said washer body including an element formed in said aperture for preventing said washer from rotating when said nut is turned onto said threaded member.
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9. A locking fastener assembly, comprising:
- a) an internally threaded fastener nut, including a fastener body having an annular skirt depending therefrom;
 - b) a fastener washer including an annular washer body having a flange extending radially outwardly therefrom;
 - c) said annular skirt extending loosely through said washer whereby said nut is freely rotatable relative to said washer before said fastener assembly is mounted;
 - d) an annular washer bearing surface on said nut body and an annular nut bearing surface on said washer body
 - e) said washer bearing surface on said nut body being convex and including a series of shallow peaks and valleys extending around said nut body so as to create undulations including annularly inclined bearing faces;
 - f) said nut bearing surface on said washer body being concave and including a series of shallow peaks and valleys extending around said washer body so as to create angular undulations with annularly inclined bearing faces;
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- g) said flange having an annular clamping surface thereon and being capable of flexing slightly axially of said washer body.
- 10. The locking fastener assembly of Claim 9 further characterized in that:
 - a) said inclined bearing faces are each somewhat spherical in shape and complementary to each other when seated in locking relationship against each other.
- 11. The locking fastener assembly of Claim 9 characterized in that:
 - a) the height of the peaks in one of said washer bearing surface and said nut bearing surface is greater than the height of the peaks in the other of said washer bearing surface and said nut bearing surface.
- 12. A locking fastener assembly, comprising:
 - a) a fastener nut and a fastener washer connected to each other in such a manner that they can be rotated relative to each other about a common axis;
 - b) an annular washer bearing surface on said nut and an annular nut bearing surface on said washer, said annular bearing surfaces being axially opposed to each other;
 - c) each of said annular bearing surfaces including a plurality of inclined bearing faces oriented circumferentially and forming what approximates an undulating annular bearing surface.
- 13. The locking assembly of Claim 12 further characterized in that:
 - a) said washer includes an axially resilient element for holding said bearing surfaces in engagement with each other.
- 14. The locking fastener assembly of claim 13 further characterized in that:
 - a) said axially resilient element is capable of flexing through a predetermined distance axially of said fastener assembly;
 - b) the effective maximum height of each of said undulating surfaces being less than said predetermined distance.
- 15. The locking assembly of Claim 13 further characterized in that:
 - a) one of said annular bearing surfaces is convex and the other is concave relative to a plane perpendicular to said common axis.

16. The locking assembly of Claim 14 further characterized in that:

- a) said inclined bearing faces on one of said nut and said washer being concave and on the other being convex.

17. The locking fastener assembly of Claim 12 further characterized in that:

- 5 a) one of said annular bearing surfaces having plateau between alternating pairs of adjacent inclined bearing faces;
- b) the other of said annular bearing surfaces having valley floors between alternating pairs of adjacent inclined bearing faces;
- 10 c) said plateau and floors being segmentally spherical about a common center when said assembly is in locking relationship.